

A New Species of the Genus *Hypochthonius* (Acari: Oribatida)

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Abstract A new species was collected from a natural *Fagus* forest at the Shirakami-sanchi World Heritage Area and a natural *Picea* forest at Mt. Hayachine.

Key words: *Hypochthonius*, new species, Oribatida

Introduction

Three specimens belonging to the genus *Hypochthonius* were collected from the bottom of hollows on a tree trunk at the Shirakami-sanchi World Heritage Area, and from deposit at the bottom of a hollow between a rock and the root (–50 cm in depth) of a tree at Mt. Hayachine. The genus is one of the interesting groups in the progress of systematics as suggested by Norton (1984). In Japan two species of the genus, *H. luteus* Oudemans, 1917 and *H. rufulus* C. L. Koch, 1836 have been recorded to date (Fujikawa *et al.*, 1993). Although it was impossible to study the type specimen of *H. rufulus*, the present specimens were studied in comparison with the type specimen of *H. luteus* and European specimens of *H. luteus* and *H. rufulus* in Berlese's Collection as well as van der Hammen's, Moritz's, Oudemans', and Tuxen's, in addition to the original and other descriptions by Aoki (1959), Berlese (1896), Grandjean (1933, 1935, 1941 & 1946), Hammen (1952), Hammer (1952), Jacot (1934 & 1936), Michael (1888), Oudemans (1914), Schweizer (1956), Sellnick (1928) and Willmann (1931). The present specimens were considered to represent a new species in this work.

Hypochthonius montanus spec. nov.

[Japanese name: Miyama-hiwadani]

(Figs. 1 & 2)

Hypochthonius sp. SH-20*: Fujikawa, Report of soil animals from the Shirakami-sanchi World Heritage Area (in press).

Measurements and color (3 exs.): Body length, 757 (793) 829 μm ; wide, 429 (469) 493 μm . Light yellowish brown. The whole integument with fine granules and large light coloured area being irregular in shape and size; the inside of every spot scabrous bearing convex polygons.

Prodorsum: Rostral border serrate; serrae fifteen (in each specimen). Prodorsal lateral sides concave at the level of rostral setae (*ro*) as well as antero-lateral to lamellar setae (*le*). Large spots present in the vicinity of setae *ro* and *le*, at the anterior position of interlamellar setae (*in*) and bothridia, and at the interlamellar region. Setae *ro* smooth setiform, extending to anterior rostral margin. Setae *le* flagelliform, sparsely ciliated, extending near anterior rostral margin. Setae *in* flagelliform, minutely and sparsely barbed unilaterally, extending for almost mid-distance between anterior rostral margin and the insertions of setae *ro*. Sensillus with five long and eight short branches (in holotype; the number uncertain in case of paratypes because of broken portions), appreciably longer than setae *in*. Two pairs of exobothridial setae smooth and short. Relative distances: (*in-in*) > (*ro-le*) \doteq (*le-le*) \doteq (*le-in*) > (*ro-ro*).

Notogaster: Straight anteriorly, broadest at the middle suture, and posteriorly angular in shape. Many spots with inside reticulation present; spots variable in shape and size. Fourteen pairs of dorsal setae and two pairs of vestigial organs of setae *e*₁ and *e*₂ present. Dorsal setae flagelliform sparsely and minutely barbed unilaterally; variable in length. Relative lengths: $h_1 \geq f_1 > h_2 > d_1 > d_2 > f_2 > cp \doteq h_3 > c_1 > ps_1 > c_3 > c_2 > ps_2 \doteq ps_3$. Relative distances: (h_1-h_1) > (c_2-c_2) \geq (d_1-d_1) > (c_1-d_1) > (f_1-f_1) >

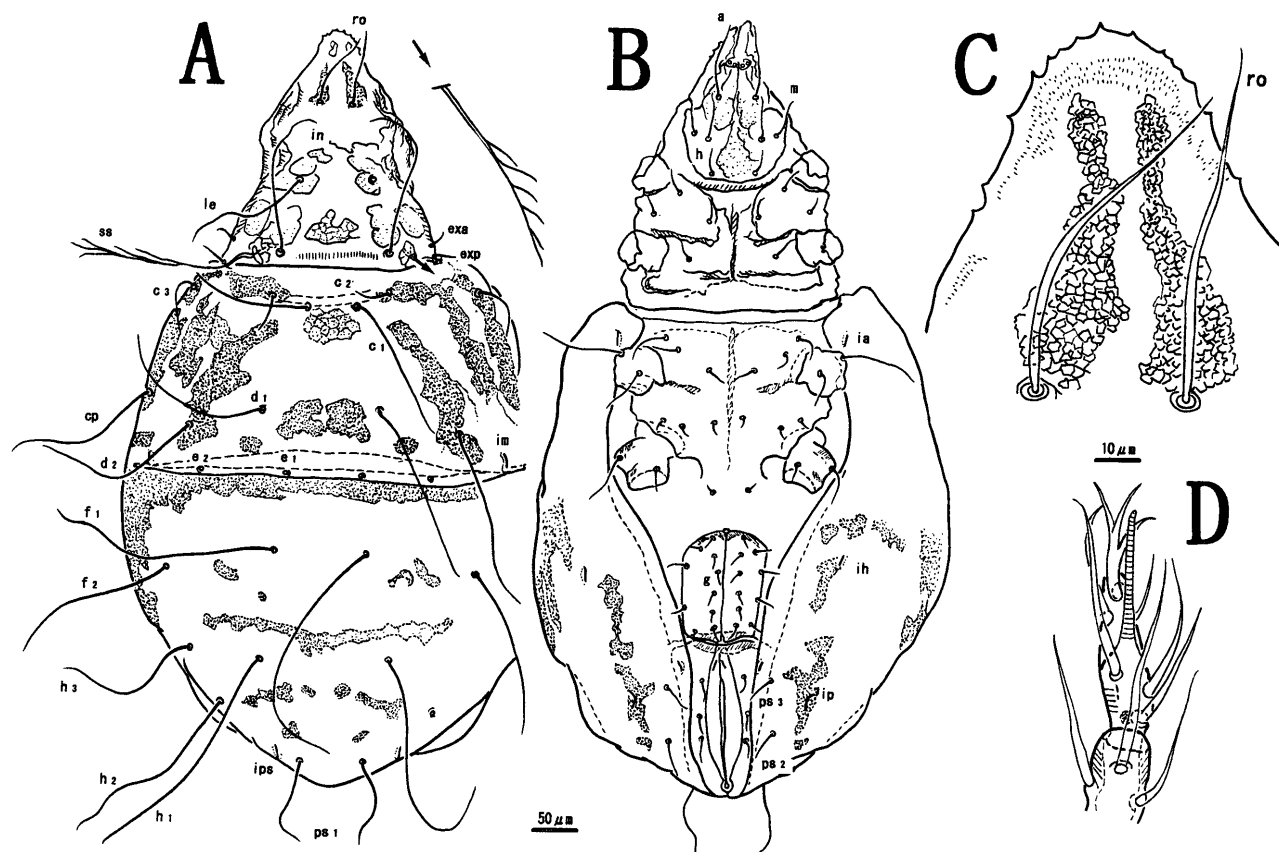


Fig. 1. *Hypochthonius montanus* spec. nov. A, Dorsal view; B, Ventral view; C, Rostrum; D, Tarsus of right palp.

$$(c_2-c_3) \geq (e_1-e_2) > (ps_1-ps_2) > (c_1-c_2) > (c_1-c_3).$$

Ventral region: All ventral setae smooth and setiform. Subcapitulum anarthric, bearing one pair of anterior (*a*), two pairs of medial (*m*), and one pair of posterior (*h*) infracapitular setae. Setal formula of pedipalp: (0-2-1-3-9 [1]); ultimate and superior setae companioned. Anogenital setae: (0-3-10-0). Relative lengths: $a > m_1 > m_2 > h > g > ad > 1a$.

Legs: All legs monodactyle; claw smooth. Leg chaetotaxy including famulus, but excluding solenidia, I (1-5-3-4-19); II (1-5-3-4-19); III (2-3-2-3-13); IV (2-3-1[2]-3-13): Number of seta on genu IV variable in number. Setae on trochantera I and II like small pointed projection in form and inserted in a hole. Solenidiotaxy, I (1-2-2); II (1-1-2); III (1-1-0), IV (1-0-0). On tarsus I, ω_1 bacilliform and ω_2 setiform inserted at the lateral side of ω_1 ; famulus spiniform, inserted in front of and between solenidia, about one-third as long as solenidion ω_1 . On genu I, solenidion inserted posteriorly to, and fairly shorter than seta *d*. On tibia I, solenidion ϕ_2

inserted in front of ϕ_1 ; ϕ_1 very long, about $9.6 \times$ as long as the diameter of tibia, but ϕ_2 very short, shorter than the famulus ϵ on tarsus I.

Material examined: Holotype (NSMT-Ac 11469) from deposit at the bottom of a hollow of a *Fagus crenata* Blume tree at the Shirakami-sanchi World Heritage Area in Aomori Pref., 2-X-1999, T. Fujikawa; 2 paratypes from deposit at the bottom of a hollow between a rock and the root (-50 cm in depth) in a natural *Picea glehnii* Masters forest, Mt. Hayachine in Iwate Pref., 6-XI-2000, Yoshinori Nakamura. The holotype is deposited in Natural Science Museum, Tokyo and paratypes in the Board of Education in Kawai-mura.

Material examined in addition to the type specimens of the new species: Holotype and 1 ex., of *H. luteus*, and 13 exs., Nos. 1-7 bearing the label '*H. rufulus*' in the Oudemans Collection of the National Museum in Leiden; 3 exs., in alcohol bearing the label '*Hyp. luteus*' and 4 exs., in alcohol, No. 186 bearing the label '*H. rufulus*' in the van der Hammen Collection of the National Museum

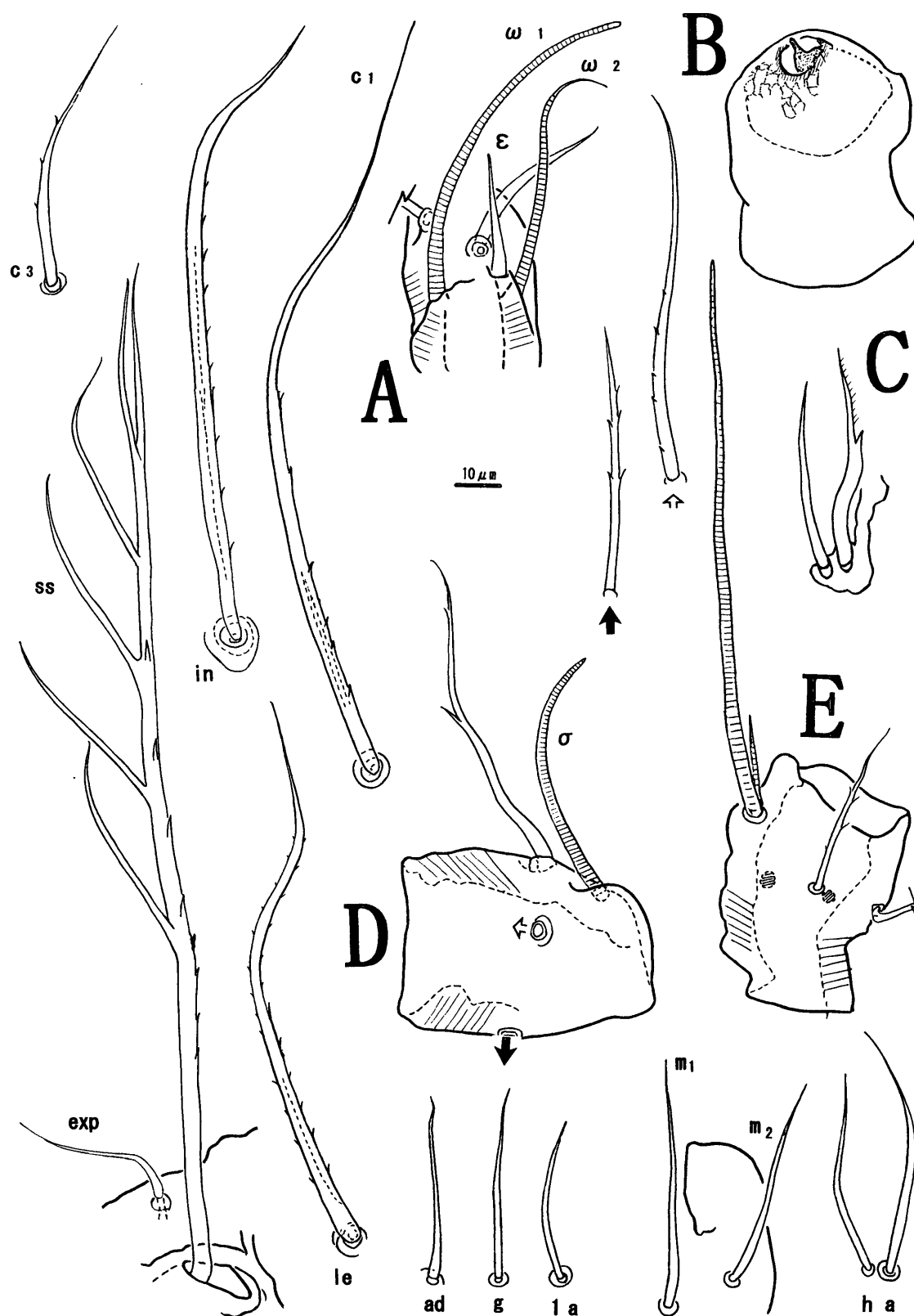


Fig. 2. *Hypochthonius montanus* spec. nov. A, Solenidial region on right tarsus I; B, Right trochanter II; C, Right labium; D, Right genu I; E, Left tibia I; Setae- ss : sensillus; exp : posterior exobothridial seta; le : lamellar seta; in : interlamellar seta; c_1 & c_2 : dorsal setae; ad : adanal seta; g : genital seta; la : epimeral seta; m_1 , m_2 , h and a : medial, posterior and anterior infracapitular setae, respectively.

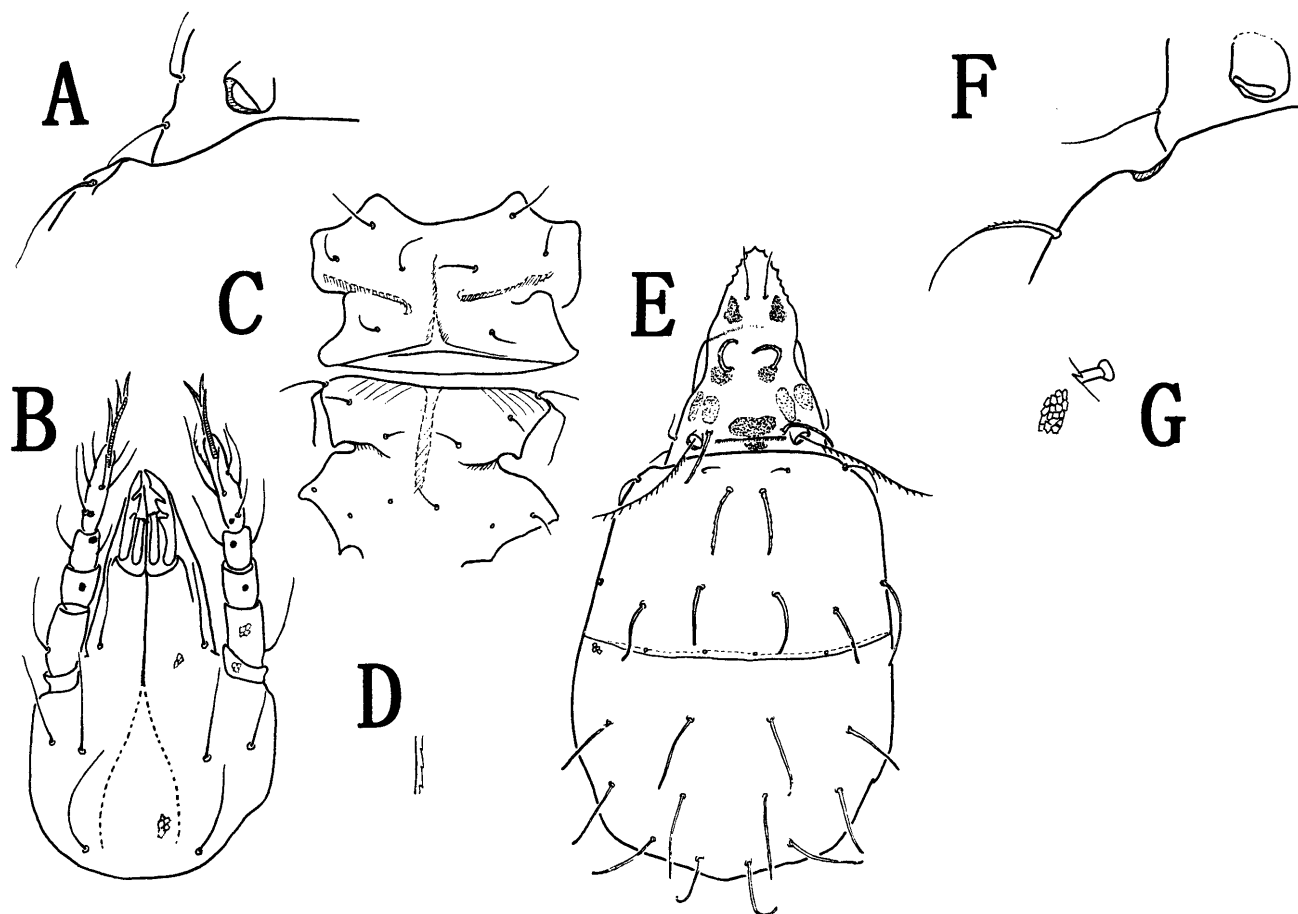


Fig. 3. A–E, *Hypochthonius luteus* in the Moritz Collection; F & G, *Hypochthonius rufulus* in the Oudemans Collection. A & F, Humeral region ($\times 450$); B, Gnathosoma ($\times 450$); C, Epimeral region ($\times 250$); D, Part of dorsal seta ($\times 450$); E, Dorsal view ($\times 150$); G, Dorsal surface ($\times 250$).

in Leiden; 12 exs., Nos. Di160–B127, Di160–B143, Di5–B143, B331–5, 9, 24, 63 and Di5–Bi09 in the Zoological Museum of Humboldt-Univ. Collection, Dr. M. Moritz leg; 1 ex., NO. 8 bearing the label '*Hypochthonius rufulus*' of the Oudemans Collection in the Berlese Collection; 7 exs., bearing the label '*H. rufulus*' in the Zoological Museum, Copenhagen, Dr. S. L. Tuxen leg.

Remarks: The new species resembles *H. elegans* Hammer, 1979, *H. luteus* Oudemans, 1917 and *H. rufulus* C. L. Koch, 1835 in the form of rostral margin, but differs as summarized in Table 1. Especially, the new species is easily recognizable from *H. luteus* by the form of sensilli, the length of dorsal setae, and the number of epimeral setae. It differs from *H. elegans* and *H. luteus* in having long lamellar setae and the mutual distance of c_2 as great as, or slightly greater than that of d_1 . Other differences between the new species and *H. rufulus* include the

appearance of the form of rostral setae and dorsal setae, the insertion and length of setae c_1 , the form of dorsosejugal suture, and the length of solenidia σ on genu I and ϕ_2 on tibia I.

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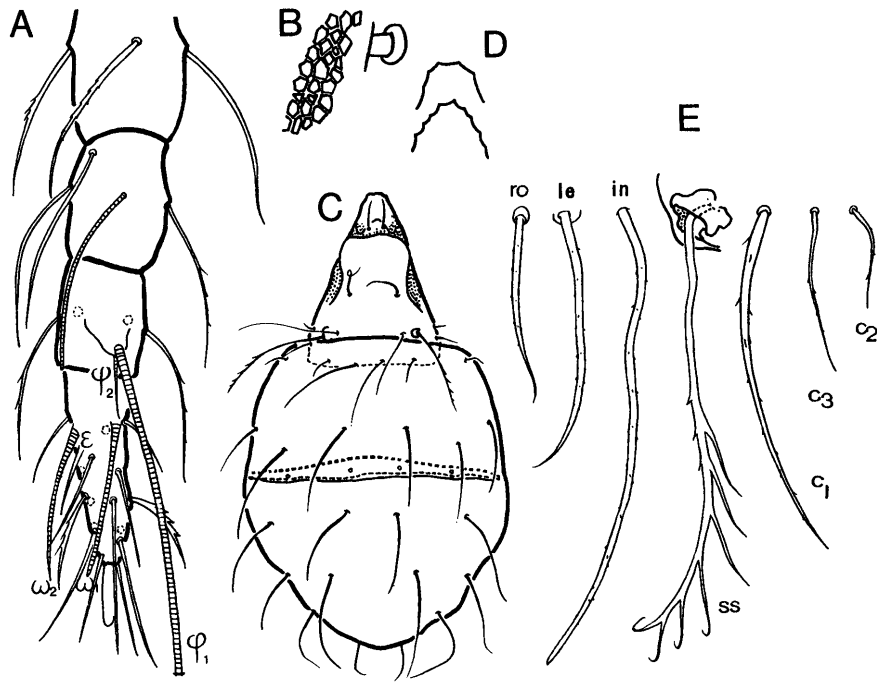


Fig. 4. *Hypochthonius rufulus*. A & B, Specimens by Dr. M. Moritz in the Zoological Museum of Humboldt-Univ. Collection; C–E, Specimens by Dr. S. L. Tuxen in the Zoological Museum, Copenhagen. A, Right leg I ($\times 450$); B, Surface beside dorsal seta f_2 ($\times 2,250$); C, Dorsal view ($\times 120$); D, Individual variation of the anterior margin of rostrum ($\times 300$); E, Setae ($\times 750$)—ro: rostral seta; le: lamellar seta; in: interlamellar seta; ss: sensillus; c_1 , c_2 & c_3 : dorsal setae.

摘 要

藤川徳子 (〒791-0203 愛媛県温泉郡重信町横河原1375愛大横河原宿舎1-115): 日本産ヒワダニ科の1新種

Edaphologia No. 73: 11-17, 2003.

白神山地世界遺産地域のブナ林と早池峰山アカエゾマツ自生南限地から, *Hypochthonius montanus* spec. nov. ミヤマヒワダニ (新称) を記録した.

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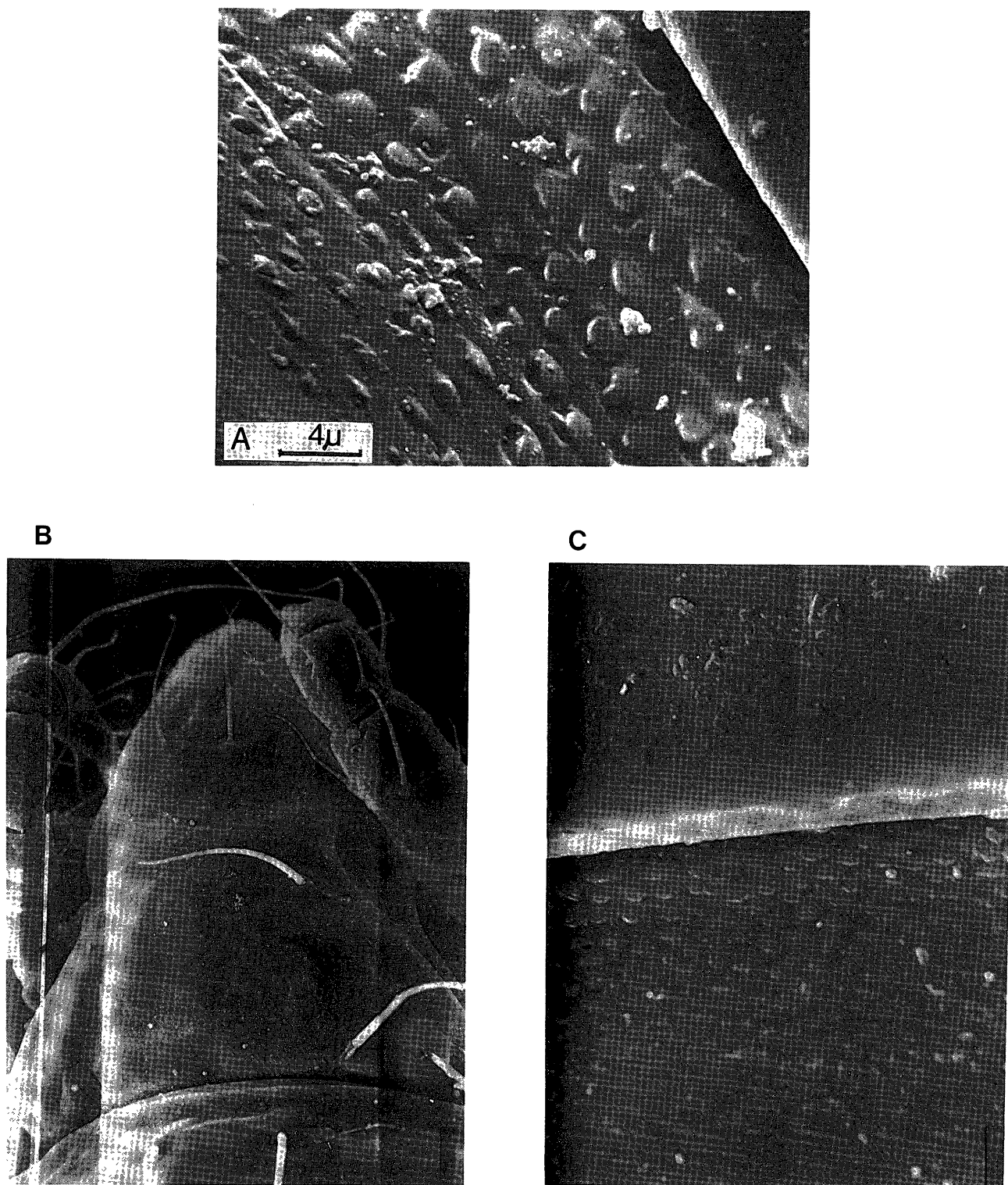


Fig. 5. *Hypochthonius rufulus* in the Tuxen's Collection. A & C, Notogastral surface between e_1 and e_2 ; B, Prodorsum. A, $\times 5,000$; B, $\times 500$; C, $\times 2,000$. Scanning electron micrographs taken by Mr. B. W. Rasmussen of the Zoological Museum in Copenhagen.

Table 1. Comparison in some features among four species of the genus *Hypochthonius*.

After Aoki, 1959 (A), Berlese's Coll. (B), Moritz's Coll. (M), Michael's Coll. (Mi), Oudemans's Coll. (O), Sellnick, 1928 (S), Tuxen's Coll. (T) and Willmann, 1931 (W). Body length and features with asteric mark (*) after descriptions up to date. Data without any mark after the original description.

	<i>H. elegans</i> Hammer	<i>H. rufulus</i> C. L. Koch <i>H. rufulus carolinicus</i> Jacot <i>H. rufulus paucipectinatus</i> Jacot	<i>H. luteus</i> Oudemans	<i>H. montanus</i> spec. nov.
Body length	570 μ m	550–754 μ m	447–650 μ m	757–829 μ m
ro	\cong 3X (<i>ro-ro</i>); dull at the tip	T: \cong 1.6X (<i>ro-ro</i>); T: barbed bilaterally	> (<i>ro-ro</i>)	> 2X (<i>ro-ro</i>); fine at the tip; smooth
le	\cong (<i>le-le</i>); smooth	T: fine at the tip; T: < (<i>le-le</i>); T: barbed bilaterally	M: blunt at the tip; M: barbed unilaterally; M: \cong 1.7X (<i>le-le</i>)	fine at the tip; barbed bilaterally; \cong 1.7X (<i>le-le</i>)
in	\cong (<i>ro-in</i>); smooth	T: < (<i>ro-in</i>); T: barbed bilaterally; M: dull at the tip	\cong (<i>le-in</i>); M: barbed unilaterally; M: dull at the tip	> (<i>ro-in</i>); barbed unilaterally fine at the tip;
Number of long branches of sensillus	5–6	5–8*; T: 6; 15–20 (<i>H. r. carolinicus</i>); 3–4 (<i>H. r. paucipectinatus</i>)	M: 9, 10, 15	5
Dorsal setae		T: barbed bilaterally	M: <i>c</i> ₂ & <i>c</i> ₃ smooth and the other setae blunt and barbed unilaterally	barbed unilaterally
<i>c</i> ₁	inserted posterior to <i>c</i> ₂ ; > (<i>c</i> ₁ – <i>d</i> ₁)	T: inserted at the level of <i>c</i> ₂ ; Mi: > (<i>c</i> ₁ – <i>d</i> ₁); B, S, W: \cong (<i>c</i> ₁ – <i>d</i> ₁); A: < (<i>c</i> ₁ – <i>d</i> ₁);	inserted posterior to <i>c</i> ₂ ; \cong 0.5X (<i>c</i> ₁ – <i>d</i> ₁)	inserted posterior to <i>c</i> ₂ ; > (<i>c</i> ₁ – <i>d</i> ₁)
(<i>c</i> ₂ – <i>c</i> ₂)	> (<i>d</i> ₁ – <i>d</i> ₁)	> (<i>d</i> ₁ – <i>d</i> ₁)*	> (<i>d</i> ₁ – <i>d</i> ₁)	\geq (<i>d</i> ₁ – <i>d</i> ₁)
Notogastral anterior margin		O: rounded		straight
Epimeral setae	(3–1–3–4)		M: (3–1–3–3)	(3–1–3–4)
Solenidion σ on genu		T: < length of genu; M: \cong 1.5X (length of genu)		> length of genu

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